(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
27 March 2003 (27.03.2003)

PCT

(10) International Publication Number
WO 03/026363 A1

(51) International Patent Classification[7]: H05G 2/00, G03F 7/20

(21) International Application Number: PCT/US02/24092

(22) International Filing Date: 29 July 2002 (29.07.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
09/956,275 18 September 2001 (18.09.2001) US

(63) Related by continuation (CON) or continuation-in-part (CIP) to earlier application:
US 09/956,275 (CON)
Filed on 18 September 2001 (18.09.2001)

(71) Applicant *(for all designated States except US)*: **EUV LIMITED LIABILITY CORPORATION** [US/US]; MS SC1-02, 2200 Mission College Boulevard, Santa Clara, CA 95052 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **FORNACIARI, Neal, R.** [US/US]; 2316 Sabrina Way, Tracey, CA 95376 (US). **KANOUFF, Michael, P.** [US/US]; 1637 Radcliffe Road, Livermore, CA 94550 (US).

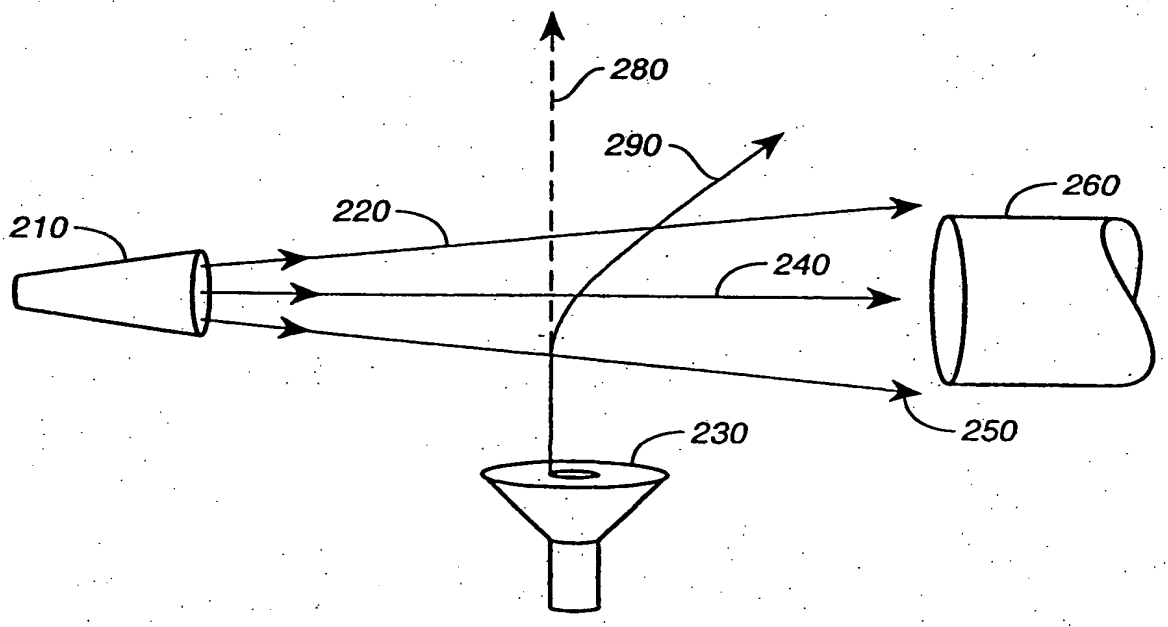
(74) Agent: **JEW, Charles, H.**; Burns, Doane, Swecker & Mathis, LLP, P.O. Box 1404, Alexandria, VA 22313-1404 (US).

(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: DISCHARGE SOURCE WITH GAS CURTAIN FOR PROTECTING OPTICS FROM PARTICLES



(57) Abstract: A gas curtain device is employed to deflect debris that is generated by an extreme ultraviolet and soft x-ray radiation discharge source such as an electric discharge plasma source. The gas curtain device projects a stream of gas over the path of the radiation to deflect debris particles into a direction that is different from that of the path of the radiation. The gas curtain can be employed to prevent debris accumulation on the optics used in photolithography.

WO 03/026363 A1